

Notice of Allowability

Application No.

09/842,969

Examiner

Ramsey Refai

Applicant(s)

MCMAHAN ET AL.

Art Unit

2152

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Appeal Brief filed on October 17, 2005.
2. ☒ The allowed claim(s) is/are 1, 3, 5-11, 13-21, and 23-31.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).


* Certified copies not received: _____.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413B) Paper No./Mail Date 1A.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


BUNJOB JAROENCHONWANIT
SUPERVISORY PATENT EXAMINER


Ramsey Refai
AU 2152

EXAMINER'S AMENDMENT

1. Responsive to Appeal Brief filed on October 17, 2005.
2. After examiner's amendment below, Claims 1, 3, 5-11, 13-21, and 23-31 are allowed.
3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Jay Brooks and Jeff Cameron on January 5, 2006.

4. The application has been amended as follows:

In the claims:

1. (Currently Amended) A method for allocating computer resources, comprising the steps of:

allocating a first resource of a first-resource type; and

allocating a second resource of a second-resource type different from the first-resource type;

wherein

a distance from the second resource to the first resource is the shortest distance among distances between the first resource to resources of the second-resource type;

the distance between the first resource and the second resource is selected from a group consisting of: a distance measured from one resource to another resource and a distance measured relative to a distance used as a reference;

the first resource and the second resource are allocated to be assigned to a program;

the distance between the computer resources is stored as firmware; and

upon power-up, an operating system is provided, from the firmware, with the distances between the computer resources for use in allocating the first resource and the second resource.

2. (Currently Canceled)

3. (Currently Amended) The method of claim 2 1 wherein the distance between the ~~computer resources~~ first resource and the second resource is measured in time units.

4. (Previously Canceled)

5. (Currently Amended) The method of claim 1 wherein the distance between the ~~computer resources~~ first resource and the second resource is measured by the distance between nodes containing the said first resource and second resource ~~resources~~.

6. (Currently Amended) The method of claim 1 wherein the distance between the ~~computer resources~~ first resource and the second resource is provided by the time taken to communicate

Art Unit: 2152

from ~~one resource~~ the first resource to the second resource ~~another resource~~ or the time taken to transfer data from ~~one resource to another resource~~ the first resource to the second resource.

7. (Currently Amended)) The method of claim 1 wherein the ~~computer resources~~ first resource and the second resource reside in a plurality of nodes each of which includes at least one resource being either an I/O device, a memory device, or a processor.

8. (Currently Amended) The method of claim 7 wherein the first resource and the second resources in a node are on a same bus or share a point-to-point link.

9. (Original) The method of claim 1 wherein the first resource is an input device associated with a storage device storing the program or storing data associated with the program.

10. (Previously Presented) The method of claim 1 further comprising the step of allocating a third resource of a third-resource type based on the shortest distance between the first resource to resources of the third resource type; or the shortest distance between the second resource and the resources of the third-resource type.

11. (Currently Amended)) A system, comprising:

a first resource of a first resource type; and

a second resource of a second resource type;

wherein

the first resource and second resource are selected based on a plurality of distances including distances between a plurality of first-type resources to a plurality of second-type resources;

the plurality of distances are selected from a group consisting of: a distance measured from one resource to another resource and a distance measured relative to a distance used as a reference; and

the plurality of distances are stored as firmware and provided to an operating system at power-up for use in selecting the first resource and the second resource.

12. (Currently Canceled)

13. (Currently Amended) The system of claim 11 wherein the plurality of distances are measured by the distance between nodes containing the first resources and nodes containing the second resource.

14. (Previously Presented) The system of claim 11 wherein the plurality of distances are measured in time units.

15. (Currently Amended) The system of claim 14 wherein the measured time units are provided by the time taken to communicate from ~~one~~ the first resource to the second ~~another~~ resource or the time taken to transfer data from ~~one~~ the first resource to the second resource.

16. (Previously Presented) The system of claim 11 wherein resources including the first type resources and the second-type resources reside in a plurality of nodes each of which includes at least one resource being either an I/O device, a memory device, or a processor.

17. (Original) The system of claim 16 wherein resources in a node are on a same bus or share a point-to-point link.

18. (Currently Amended) The system of claim 11 wherein the plurality of distances between the first resource and the second resource ~~is~~ are the shortest distances among the plurality of distances between a plurality of first-type resources to a plurality of second-type resources.

19. (Previously Presented) The system of claim 11 further comprising a third resource of a third-resource type wherein the third resource is selected based on the shortest distance between the first resource to a plurality of third-type resources; or the shortest distance between the second resource to the plurality of third type resources.

20. (Currently Amended) A computer-readable medium embodying instructions that perform a method for allocating computer resources, the method comprising the steps of:

allocating a first resource of a first-resource type; and

allocating a second resource of a second-resource type different from the first-resource

type;

wherein

a distance from the second resource to the first resource is the shortest distance among distances between the first resource to resources of the second-resource type;

the distance between the first resource and the second resource is selected from a group consisting of: a distance measured from the first resource to the second resource and a distance measured relative to a distance used as a reference;

the first resource and the second resource are allocated to be assigned to a program;

the distance between the ~~computer resources~~ first resource and the second resource is stored as firmware; and

upon power-up of a system running an operating system, the operating system is provided, from the firmware, with the distances ~~between the computer resources~~ to be used in allocating the first resource and the second resource.

21. (Currently Amended) A method for allocating computer resources, comprising the steps of:

providing a plurality of first resources of a first-resource type;

providing a plurality of second resources of a second-resource type different from the first-resource type; and

allocating a first resource of the first resource type and a second resource of the second-resource type;

wherein

a distance between the first resource and the second resource is the shortest distance among the distances between the plurality of first resources to the plurality of second resources;

the distance between the first resource and the second resource is selected from a group consisting of: a distance measured from one resource to another resource and a distance measured relative to a distance used as a reference;

the first resource and the second resource are allocated to be used by a program; distances between the ~~computer resources~~ first resource and the second resource is stored as firmware; and

upon power-up of a system running an operating system, the operating system is provided, from the firmware, with the distances ~~between the computer resources~~ to be used in allocating the first resource and the second resource.

22. (Currently Canceled)

23. (Currently Amended) A system comprising:

a plurality of nodes having resources;
an operating system running on a processor in a node of the plurality of nodes; and
firmware embodying relative distances between the plurality of nodes;
wherein

the relative distances between the plurality of nodes is selected from a group consisting of: a distance measured from one resource to another resource and a distance measured relative to a distance used as a reference;

upon power-up, the operating system uses the relative distances between the plurality of nodes in the firmware to allocate resources to be used by a program.

24. (Previously Presented) The system of claim 23 further comprising an interconnect fabric connecting the plurality of nodes; the interconnect fabric includes node controller chips and cross-bar chips wherein

a node-controller chip connects at least one I/O controller, one memory controller, a plurality of processors and a plurality of crossbar chips; and

a crossbar chip, on a first side, connects to at least a node controller chip, and, on a second side, connects to at least either a crossbar chip or another interconnect chip.

25. (Previously Presented) The system of claim 23 wherein a node of the plurality of nodes includes a node-controller chip connecting at least an I/O controller, a memory controller, a processor, and another node.

26. (Previously Presented) The system of claim 23 wherein a node of the plurality of nodes includes one or a combination of one or more of an I/O controller connected to I/O devices, a memory controller connected to memory arrays, and one or more processors.

27. (Previously Presented) The system of claim 23 wherein a node of the plurality of nodes includes a bus connecting an I/O controller connected to I/O devices, a memory controller connected to memory arrays, a plurality of processors, and a bridge connecting to another node of the plurality of nodes.

28. (Previously Presented) The system of claim 23 wherein an I/O device is first allocated, then a memory array is allocated; a distance between the memory array to the I/O device is the shortest distance among a plurality of distances between a plurality of memory arrays to the I/O device.

29. (Previously Presented) The system of claim 28 wherein a processor is allocated; a distance between the processor to the I/O device is the shortest distance among a plurality of distances between a plurality of processors to the I/O device.

30. (Previously Presented) The system of claim 28 wherein a processor is allocated; a distance between the processor to the memory array is the shortest distance among a plurality of distances between a plurality of processors to the memory array.

31. (Previously Presented) The method of claim 1 wherein the first resource is an I/O device connected to a storage device storing the program or storing data associated with the program.

5. The following is an examiner's statement of reasons for allowance:

After the examiner's amendment was made to clarify and distinguish the applicant's invention over the prior art of record, the prior art of record fails to teach neither singly nor in combination the claimed limitation for allocating a first resource of a first-resource type; and allocating a second resource of a second-resource type different from the first-resource type; wherein a distance from the second resource to the first resource is the shortest distance among distances between the first resource to resources of the second-resource type; wherein the distance between the first resource and the second resource is selected from a group consisting of: a distance measured from one resource to another resource and a distance measured relative to a distance used as a reference; and upon power-up, an operating system is provided, from the firmware, with the distances between the computer resources for use in allocating the first resource and the second resource.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

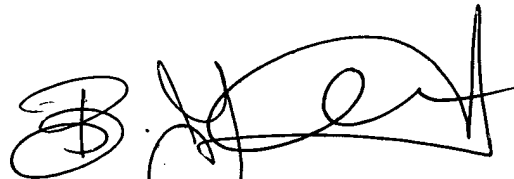
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramsey Refai whose telephone number is (571) 272-3975. The examiner can normally be reached on M-F 8:30 - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on (571) 272-3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ramsey Refai
Examiner
Art Unit 2152

RR 
January 6, 2006


BUNJOB JAROENCHONWANIT
SUPERVISORY PATENT EXAMINER